

Bisulphite technology

For sulphite pulp mills requiring the absorption of sulphur dioxide to produce cooking liquor, NORAM offers expert design services to ensure a seamless and reliable SO₂ process. By achieving high conversion rates of SO₂ and maintaining good control over process conditions, we maximize the utilization of SO₂ while meeting stable product specifications.

Bisulphite technology

Following gas quenching operations, several options are available for the SO₂ gas, thereby absorption into an alkali to produce a sulphite or bisulphite solution. The alkali solution can be caustic soda, soda ash, ammonia, slaked lime or magnesium hydroxide, depending on the client needs. Reliable operation of the absorption systems is achieved through appropriate material selection and a long history of tailoring absorption systems to specific customer needs.

How it works

The sulphite/bisulphite process for absorbing SO₂ into an alkali involves a series of chemical reactions that convert sulphur dioxide into sulphite and bisulphite, depending on the conditions. By understanding these reactions, the design by NORAM minimize by-products and manage the risks of scaling.

The pH of the solution is carefully controlled to maintain the ratio of sulphite and bisulphite that is requested. Typically, a pH around 4.5 is maintained to favour the production of bisulphite, and higher pH values shifts the reaction to favour formation of sulphite.

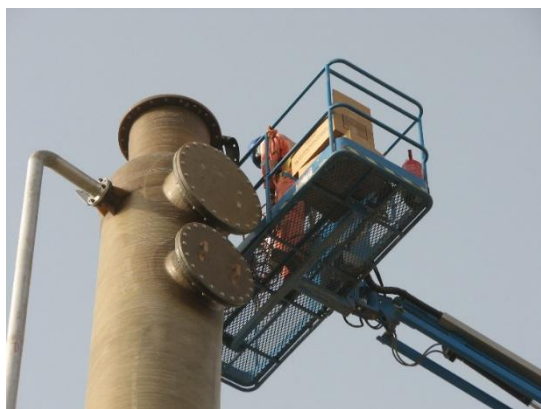


Figure 1 Bisulphite tower

With a good understanding of reaction thermodynamics, our bisulphite tower is designed to maximise the conversion of SO₂ to sulphite and bisulphite. As a result, we achieve a 90% conversion of SO₂ when producing bisulphite. The remaining 10% is captured in a scrubbing tower, where it is converted to sulphite, ensuring complete SO₂ removal from the vent gas. The sulphite is then recirculated back to the bisulphite tower.

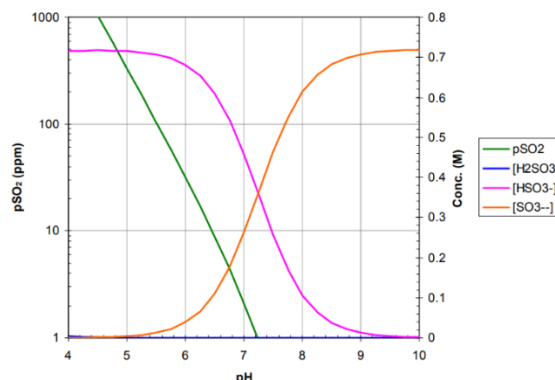


Figure 2 Distribution of sulphite and bisulphite vs pH

The benefits

- Controlled process conditions allow stable product concentrations
- 90% conversion of SO₂ to bisulphite over bisulphite tower
- Reuse of sulphite from scrubbing section

NORAM End-to-End Process Expertise

At NORAM we are experienced with designing complete systems from sulphur to end product. Our expertise enables us to optimize the process design and mechanical configurations of the process to minimize the risk of corrosion and meet the requirements by the client in an efficient way.

